# EXHIBIT 17

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# The Patent System Is Not Broken

**By Patrick Doody**

The patent system is not broken, despite the cavalcade of critics claiming that there is a crisis in innovation and that it is the fault of the patent system. The patent system may end up broken, however, if practicing patent attorneys remain silent and permit the critics to persuade Congress, the Supreme Court, and the US Patent and Trademark Office (USPTO) to implement impractical patent policies. An influential consortium of companies and associations (the Coalition for Patent Fairness, whose members include the Business Software Alliance, the Information Technology Industry Council, Apple Computer, Comcast, Dell, Intel, Time Warner, Visa, and Microsoft) recently has voiced its preference for a weaker patent system, as has a group of legal scholar-critics advocating mostly on the consortium's behalf behind the cloak of professorial neutrality. This coalition represents the computer software and hardware industry, and perhaps a weaker patent system (or no patent system at all) would be better for them, especially since many of them enjoy such a large market share in their sectors that patents to them may seem unimportant. The patent laws in general do not discriminate across technology sectors, however, and representatives of the remaining technology areas (BIO, PHRMA, and pharmaceutical, biotech, medical device, electronic products, automobile, consumer products companies, etc.) all favor a strong patent system.

The real issue then is whether a weak or strong patent system better achieves the constitutional mandate to promote the progress of science and the useful arts (*i.e.*, promoting innovation) and whether that patent system can benefit all technology sectors. The United States experienced a period when the patent system was weak, from 1940-1980. The undeniably negative impact that the weak patent system had on innovation made it clear that a strong patent system better serves the constitutional mandate for all technology sectors. Moreover, the patent critics have come forward with no objective evidence to support the argument that a weaker patent system could somehow benefit innovation, much less benefit the industry sector for which some advocate. Nor have the critics provided any objective evidence that the patent system today is curbing innovation. In fact, a recent study by one of the patent critics shows that the patent system has not harmed the software industry at all. The now robust patent system has promoted innovation the past 25 years like never before, and it continues to promote innovation. No, the patent system is not broken, and all of the arguments advanced for weakening the system are based on factually unsupported and unqualified allegations.

This article will explain the patent system critic's allegations and describe the potential harm to the patent system from their factually unsupported and unqualified allegations. The article then will provide objective evidence that refutes the critics' allegations supporting their desire to weaken the patent system. Finally, the article will explain why the critics have focused on the wrong issue: It is not the harm that an invalid patent might cause to innovation and competition (we all know this to be the case and accept it); rather, we should focus on the harm caused if the patent system were weakened so that it did not allow otherwise valid claims or inappropriately invalidated a valid patent (if the laws are modified to make it too easy to invalidate patents). Considering the more appropriate issue, and fully understanding the objective evidence, one comes to the inescapable conclusion that the patent system is nowhere near broken; it is firing on all cylinders. Congress, the Supreme Court, and the USPTO should not continue to weaken the rights of patent holders in an attempt to fix it.

## What Are the Critics Saying?

What are the critics saying? The anti-patent critics argue that the patent system is broken and come to the remarkable conclusion that it is curbing innovation. First, the critics claim that the patent system is broken because the USPTO is issuing what they allege to be invalid patents (or questionable patents or bad patents) or poor quality patents. Second, the critics argue that the patent system is broken because it is easier to obtain a patent today than it was 10-15 years ago, the patent office is issuing too many patents, and patent examiners are overburdened and do not have enough time to examine today's complex technology. Third, the patent system is broken because, the critics allege, it is harder to invalidate a patent in court today than it was 30 years

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ago. Accepting these allegations as universal truths (some commentators have suggested that it is "universally accepted" or that there is a "general consensus" that the patent system is broken), the critics remarkably conclude that the patent system is harming the economy by curbing innovation. The real facts directly contradict all of the alleged universal truths and the critics' ultimate conclusion that innovation is being harmed belies the data.

## Who Are the Patent Critics?

Who are the patent critics? The critics consist mostly of a tightly knit group of university professors and non-patent attorneys who are critical of the patent system and who favor weakening patent rights.[1] The critics publish countless articles every year and repeatedly cite to one another's work, if not simply repeat it or provide a synopsis thereof in a different venue, which gives the impression that there are numerous opinions consistently critical of the patent system. This coterie of most frequently published patent critics is so insular and close-knit that no effective independent review of their work is likely.[2] In other words, the patent critics do not present a competitive and open-minded search for rational reform, but rather advocate on behalf of only one technology sector that has found itself on the losing end of two recent high-profile patent infringement cases not because of bad patents but because of bad business judgment.[3]

The patent critics make sweeping statements regarding the validity or quality of a handful of patents, despite the fact that most if not all of the critics have never practiced patent law and are not registered patent attorneys or agents. That is, the critics are not qualified to opine on the validity of a patent in the sense that their opinion regarding the validity of a patent would not be admissible in court.[4] The patents that the critics allege are invalid (or are of poor quality) almost all fall into the category of silly patents, or patents on ideas that most individuals (other than the inventor perhaps) believe have little or no market value (spanking machines, wristwatches on a teddy bear, automatic buttocks kickers, and the like).[5] But these patents have existed since Thomas Jefferson examined his first patent application, and there is no empirical evidence that suggests that the USPTO is issuing more silly patents today as a percentage of all patents issued than it has in the past (there are Web sites, *see www.patentlysilly.com*, and books, for example, *Patently Absurd*, written on the silly patents that date back decades). These silly patents have no effect, however, on competition or innovation and in fact likely promote innovation by encouraging thinking outside the box.

The critics' unsupported and unqualified opinions regarding the validity and quality of an issued patent are repeated in their allegations that it is easier to obtain a patent and harder to invalidate an issued patent. These allegations (not facts) are then said to support their conclusion that the patent system is harming innovation, a surprising conclusion to most since innovation continues to increase at a feverish pace.

## The Critics Are Wrong and the Damage They Have Caused Could Harm Innovation

The patent critics have created a newsworthy item out of one that is not newsworthy by unsupported allegations that the patent system is broken.[6] The real problem is that patents are quickly becoming mainstream news given the few high-profile cases of the past four years, and those who do not practice patent law do not appreciate the intricacies of the system.[7] In addition, many complaints regarding patent quality come from new companies harboring a naïve or ignorant view of the patent system. Because of this, governmental agencies and the Supreme Court have been influenced by the inaccurate and unsupported published statements by these critics and consequently have issued voluminous reports that in turn are not well founded in fact or law.[8] Congress also has been unduly influenced, and has proposed radical changes to the patent laws.[9] It is time to set the record straight and present the real facts so that if reform is ultimately needed, Congress, the Supreme Court, and the USPTO can make an informed decision based on facts, not feelings.[10]

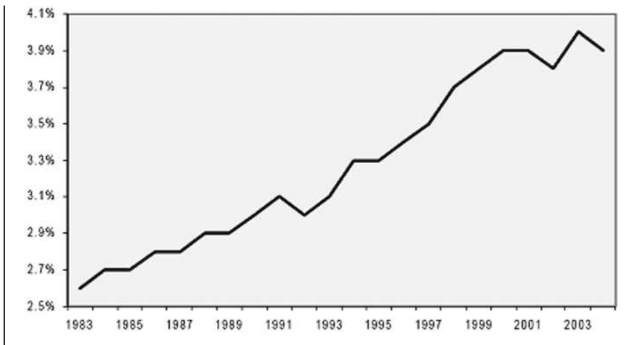
## The Ultimate Conclusion that the Patent System Is Harming or Curbing Innovation Belies the Data

The allegations underlying the critics' ultimate conclusion are inaccurate. It therefore is not surprising that their ultimate conclusion that the patent system is somehow harming innovation is illusory and inconsistent with the facts.[11] More surprising perhaps is the fact that governmental agencies and even Congress have bought into the notion that the patent system is harming innovation and seek to weaken it, with no empirical evidence showing any harm to innovation.

No such evidence exists. Rather, every generally accepted economic indicator of innovation reveals that the United States is innovating today more so than it has in the past. There is no reason to believe that the patent system is not one of the root causes of that enhanced innovation. Most governments measure innovation by examining the number of high-tech or knowledge-based jobs as a percentage of all jobs, the number of patent applications filed or patents granted, the amount of money industry invests in research and development (R&D), the amount of R&D expenditures compared to gross domestic product (GDP) or net income, and the number of scientific and technical publications each year.[12] Each of these factors indicates that innovation continues to be on the rise.

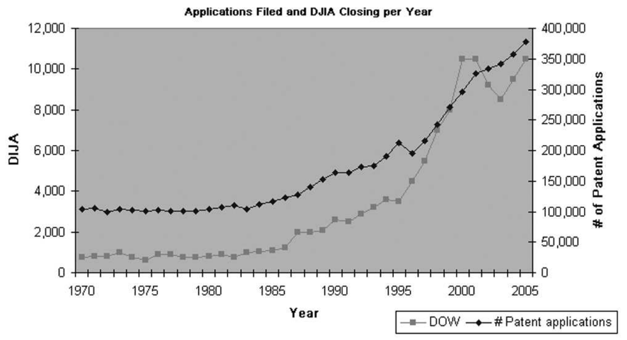
Figure 1 shows the increase in percentage of science and technology jobs as a percentage of total employment.[13]

**Figure 1**
**Science and Technology Employment as a Percent of Total Employment**


4.1%
3.9%
3.7%
3.5%
3.3%
3.1%
2.9%
2.7%
2.5%
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003

The critics bemoan the number of patent applications filed and issued per year and remarkably rely on that fact as an indicator that the patent system is broken. To the contrary, the increase in applications filed and the concomitant increase in issued patents is direct evidence of increased innovation.[14] Figure 2 reveals the dramatic similarities between the number of patent applications filed per year since 1970 and the Dow Jones Industrial Average.[15] One can readily transpose the patent application curve to other economic indicator curves and see the same or similar correlation.

**Figure 2**
**Applications Filed and DJIA Closing per Year**


Applications Filed and DJIA Closing per Year
12,000
10,000
8,000
6,000
4,000
2,000
0
DIJA
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
# of Patent Applications
1970
1975
1980
1985
1990
1995
2000
2005
Year
DOW
# Patent applications

The amount of money that domestic industries and the federal government spend on R&D is reflected in Figure 3.[16] Again, note the interesting upturn in private investment from the early 1980s to present.

The amount of money private industry and government spends on R&D has, as a fraction of GDP, also increased as shown by Figure 4.[17]

**Figure 3**
**Public and Private US Domestic Investment Trends, 1953-2005**

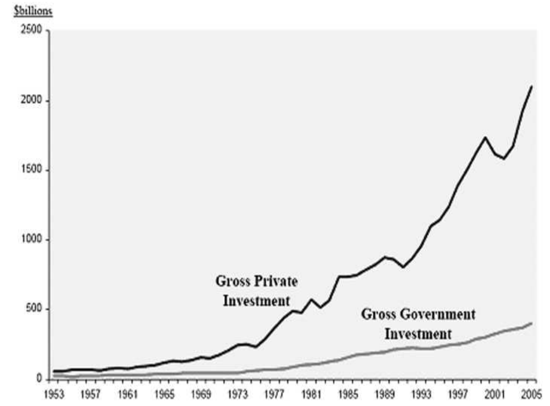
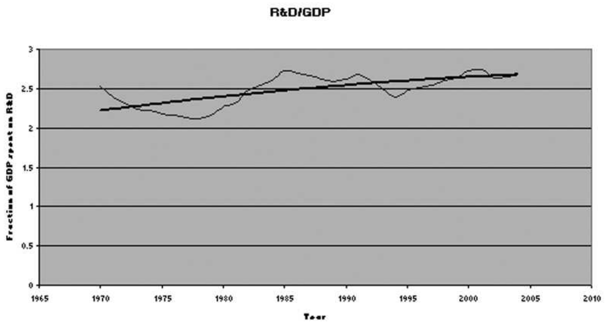

$billions
2500
2000
1500
1000
500
0
Gross Private Investment
Gross Government Investment
1953
1957
1961
1965
1969
1973
1977
1981
1985
1989
1993
1997
2001
2005

**Figure 4**
**R&D/GDP**


R&D/GDP
3
2.5
2
1.5
1
0.5
0
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010

The number of science and engineering articles published in the United States declined in the late 1990s,[18] but the trend line still moves upward, again indicating more innovation, especially when combined with the total number of articles published. See Figure 5.[19]

**Figure 5**
**Number of Science and Engineering Articles Published**

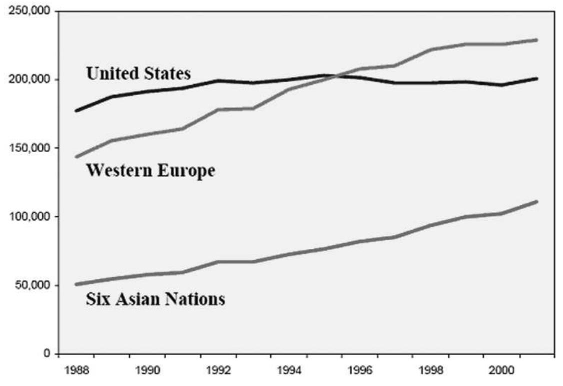

250,000
200,000
150,000
100,000
50,000
0
United States
Western Europe
Six Asian Nations
1988
1990
1992
1994
1996
1998
2000

**Figure 6**
**Intel Patents Per Year**

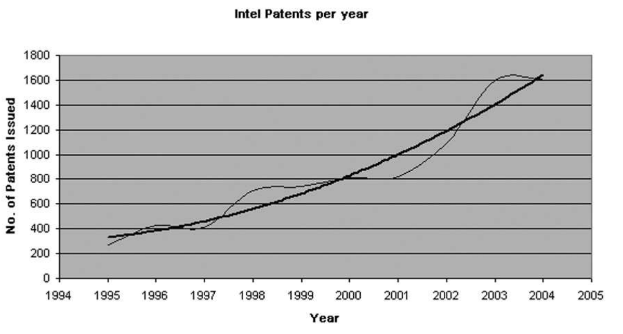

Intel Patents per year
No. of Patents Issued
0
200
400
600
800
1000
1200
1400
1600
1800
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
Year

**Figure 7**
**Intel Expenditure on R&D Per Year**

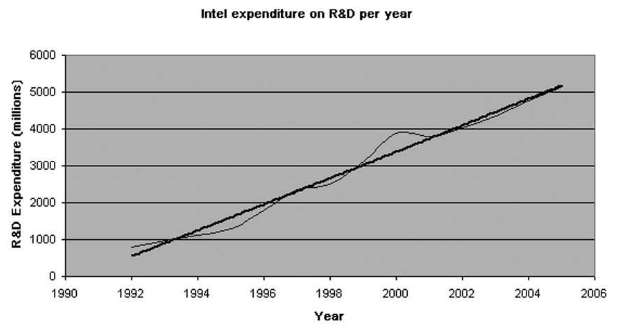
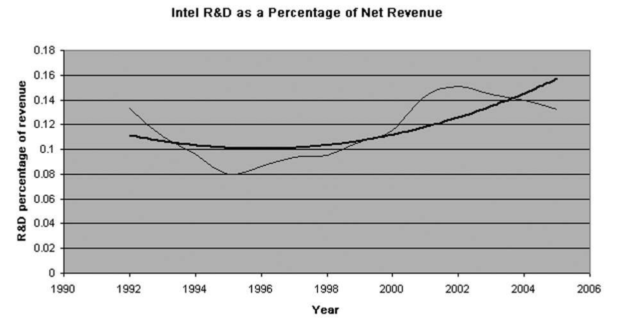

Intel expenditure on R&D per year
R&D Expenditure (millions)
0
1000
2000
3000
4000
5000
6000
1990 1992 1994 1996 1998 2000 2002 2004 2006
Year

**Figure 8**
**Intel R&D as a Percentage of Net Revenue**


Intel R&D as a Percentage of Net Revenue
R&D percentage of revenue
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
1990 1992 1994 1996 1998 2000 2002 2004 2006
Year

Every economic indicator of innovation reveals that innovation continues on the rise.[20] Despite the mountain of factual data supporting the notion that innovation has not been harmed at all, the critics continue the assault on the patent system relying not on facts but instead on anecdotal stories from industry executives about innovation. The FTC report[21] relies heavily on statements from a biotech company CEO that his company decided to forego research in a particular area already covered by a "questionable" patent.[22] Questionable patent or not, these statements present the epitome of the patent system at work in encouraging innovation in other areas, as opposed to encouraging copying in an area covered by a patent.[23]

Other critics rely heavily on statements by representatives of the computer hardware industry in describing the so-called patent thicket.[24] This patent thicket is no different from the number of patents facing other industries that manufacture products that contain numerous parts (*e.g.*, automotive industry, consumer electronics, manufacturing equipment, etc.). Products are more complex today than they were 20 years ago, so it is not surprising that the products will be covered by more patents. But, the argument that the patent thicket is somehow stifling innovation belies the data and is inconsistent with what the computer hardware industry is telling its investors.[25] Publicly available information on Intel, for example,[26] reveals that it is obtaining an ever-increasing number of patents (we assume that Intel believes that its patents are valid and enforceable and are not the type of bad or questionable patents to which the critics refer),[27] that it increases the amount of money spent on R&D, and that the ratio of R&D expenditures per net income is increasing. In other words, Intel continues to innovate more and more every year, despite the patent thicket. This information is depicted in Figures 6, 7, and 8.

The Figures 6-8 with overlaid trend lines all reveal that Intel is innovating at a greater pace every year, providing clear, objective evidence that the patent thicket has not curbed innovation. Additional objective evidence that the patent system (or the patent thicket) is not curbing innovation is reflected in a recently published article discussing the world's most innovative companies, whereby eight out of the top 10 are US-based companies.[28] More than 1,000 senior managers responded to the global survey, many of them managers from the same corporations that sent individuals to testify before the FTC and Congress regarding the patent system and patent reform. The innovation article lists the top eight enemies of innovation, and despite the critics' cries to the contrary, the patent system is not one of them.[29] If the patent system truly was in a state of crisis[30] and was harming innovation in the manner that the critics claim, the patent system should have been at least one of the top eight "enemies of innovation," but the patent system was not even listed.

Finally, a recent study by Robert Merges reveals that the patent system has not harmed innovation in the software industry sector, which directly contradicts the Coalition of Fairness's lobbying efforts in Congress to weaken the patent system.[31] Merges concludes that the predictions of individuals in the software industry in the 1980s and early 1990s that small firms would dry up and only large, bureaucratic, and decidedly non-innovative firms would remain were wrong. The study further notes, consistent with the views espoused in this article, that the data are "consistent with the view that patents correlate closely with R&D and innovation—which would tend to refute the early 1990's argument that patents are anathema to software innovation."[32] The patent system is not curbing innovation even in the software industry—the industry sector most critical of the patent system.

The patent critics' (and the FTC report's) allegations that the patent system is somehow stifling or harming innovation are factually unsupported and wrong.

## Patent Quality Is Increasing

The critics allege that the USPTO is issuing poor quality patents. This allegation is not based on direct evidence; rather, it is supported by:

- Referring to a handful of silly patents;
- Noting that the USPTO is issuing more patents (or more than other countries);
- Alleging that the examination standards have been reduced with no evidence of any reduction in examination standards; and
- By noting that patent examiners today are overburdened and have less time to examine more applications than they did 30-50 years ago.

Jon Dudas, Director of the PTO, addressed most of these issues when he addressed the American Intellectual Property Law Association on February 3, 2006.

The first misperception is that because the PTO is issuing more patents, patent quality is decreasing, he said. He quoted from a January 2006 editorial in the *Roanoke Virginia Times*, which stated that "overturning patents has now become commonplace. Federal officials with a zeal for intellectual property rights have loosened standards dramatically, and the number of patents issued annually has doubled since 1990."

Dudas also cited another editorial to the same effect, which added that companies now face higher licensing fees or legal costs because they must overturn low-quality patents that should never have been awarded.

These conclusions are the "opposite of the reality," Dudas said. "The logic underlying these conclusions is flawed. It's like saying that because Starbucks sold more cups of coffee in 2005 than it did in 1990, the quality of their coffee must have decreased as well."

The number of patents issued annually has doubled since 1990, Dudas said, but the number of patent applications and examiners has also increased since then. Since 1990, he said, there has been a 71 percent increase in patents issued, but a 136 percent increase in filings, and a 152 percent growth in examiners.[33]

The fact that the USPTO issues more patents has no bearing on quality.

The critics often refer to silly patents as evidence that the quality of patents has decreased,[34] but the critics provide no evidence that the USPTO is issuing more of these patents on a percentage basis than it has in the past.[35] Again, no such evidence exists. Silly patents have existed for years.[36]

The critics also cite as evidence of poor quality the fact that patenting of important inventions is increasing more rapidly in the United States by US companies, than patenting by US companies in foreign patent offices.[37] The alleged proof of poor quality is that the number of important inventions originating in the United States and patented in foreign countries (presumably in Europe and Japan primarily) increased by 51 percent between 1987 and 1998, but the number of successful applications to the USPTO by US inventors increased 105 percent during the same period.[38] The critics surmise that the "fact that the growth in successful PTO applications was, instead, twice as large as the growth of international families is hard to explain in any manner other than declining standards in the USPTO, producing an ever-growing proportion of US patents the patent holders themselves did not think merited patenting elsewhere."[39]

The increased growth in US patents is readily apparent to practicing patent attorneys and is not hard to explain. The critics fail to recognize that two technology areas in which patenting increased dramatically between 1987 and 1998 were the software and business methods sector on the one hand and the biotechnology sector on the other.[40] Companies in the United States do not file applications covering these types of inventions in many other countries because those countries do not allow the patenting of software, business methods, and/or methods of treating humans.[41] In addition, many of the applicants filing applications in these areas were universities, or small start-up biotech and software companies that did not have the financial means to file extensively internationally, regardless of whether the inventions were important.[42] Accordingly, the fact that patenting increased at a greater rate in the United States than in other countries (assuming the data presented by the critics were indeed true) is not evidence of poor patent quality in the United States; rather it is the natural consequence of lack of patent protection in foreign countries and lack of funds needed to file internationally.

The critics also refer to the fact that patent examiners today are handling more applications and have less time to examine applications than 30 years ago as evidence of poor patent quality.[43] Jaffe and Lerner state that between "1958 and 1975, for instance, there were never more than 100 applications received for each examiner. In nine out of 11 years since 1992, the applications per examiner have exceeded that threshold."[44] In 1992, the USPTO began issuing computers to all examiners, all examiners soon had the ability to search for prior art electronically (instead of manually in the patent shoes as was the case prior to 1992), and examiners had the ability to electronically generate office actions (instead of hand writing the actions, having them transcribed by a patent pool, and then having to significantly edit the transcribed actions to correct the typographical errors).[45] While governmental agencies may not increase efficiency at the same rate as the private sector, one certainly would expect patent examiners to become more efficient, certainly after 1992. The fact that examiners are capable of handling more applications today than 30 or 50 years ago has nothing to do with quality, and everything to do with increased efficiency. Indeed, productivity research suggests that increased automation and improvements in systems and methods have, for most sectors, correspondingly increased output per employee per year.[46]

The critics allege that patent quality is decreasing because examiners do not have enough time to examine cases, are overworked, and that the technology is more complex today, requiring more time for examination. These allegations all run counter to the Department of Commerce Office of Inspector General's final report that stated: "PTO statistics showed that patent quality is improving and patent complexity is not materially increasing," that their review of production reports "revealed that approximately 95 percent of the art units processed applications in less time than their allotted goals," and that the reviewers "were told by examiners that [examiners] could do more work, but that there is no additional incentive."[47] The critics' allegations again run directly counter to the facts: Patent complexity is not materially increasing, and examiners have plenty of time to adequately and effectively examine patent applications.[48]

While the critics point to no objective evidence that quality is decreasing at the USPTO, the USPTO's own objective evidence reveals that quality is improving. "Dudas said that the quality of issued patents is improving. In 2005, he noted, the allowance error rate was 4.5 percent whereas in 2004 the rate was 5.3 percent. For the first quarter of 2006, the rate was 2.3 percent, he said, the lowest in the last 30 years."[49] Director Dudas stated: "To let there be a perception that quality is continuously declining and to have that argument made in editorials and elsewhere is the wrong place to have that debate. The debate has to be based on the facts we have."[50]

No data or evidence supports the critics' allegation that the USPTO is issuing more invalid patents today than in years past or that the quality of patents has decreased. Rather, all of the data, when considered objectively, indicate that patent quality has not decreased, but has stayed about the same, or actually increased, over the past 20 years.[51]

## Patents are Actually More Difficult to Obtain Today Than 10-15 Years Ago

The critics allege that it is easier to obtain a patent today than it was 15 years ago.[52] The critics have alleged that the approval rate today approaches 90 percent,[53] after factoring in the approval of continuation applications. A fair measure of the approval rate at the USPTO is readily determined by dividing the total number of patents issued based on applications filed in a given year by the total number of applications filed.[54] This is essentially the rate that the USPTO uses in assessing its allowance rate, which was about 60 percent in the late 1980s when the author was a patent examiner. Figure 9 shows the allowance rate per year since 1975.

**Figure 9**
**Allowance Rate Per Year**

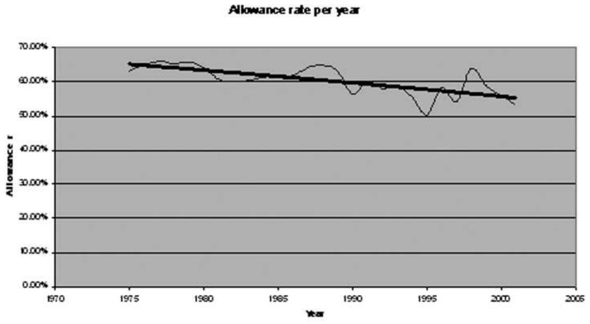


Figure 9 reveals that it is actually much harder to obtain a patent today than it was 15 years ago or even 20 years ago.[55] The polynomial trend line also shows that the USPTO is trending downward in its allowance rate.

The USPTO's own facts are consistent with the facts presented here. Jon W. Dudas noted that the allowance rate in 2005 was 58 percent, whereas in 1990 the rate was 70 percent.[56] Dudas also noted that the allowance rate for business method patents, perhaps the most widely criticized as being of low quality or questionable, was 11 percent, stating: "How can there be a perception that business method patents are easier to get when the rejection rate is 89 percent?"[57] Accordingly, the critics' allegation that it is easier to obtain a patent today simply is not an accurate reflection of the real facts but is based on data that has been fudged to support an argument.

## While Patents Are Found Not Invalid More Frequently Today Than in the 1970s, that is a Good Thing

The critics rely on inaccurate or incomplete data to allege that patents are found not invalid today more frequently than in the anti-patent era of the 1970s.[58] Innovation and the economy were at a standstill in the 1970s. The situation was so severe that, in 1978, Jimmy Carter commissioned an Advisory Committee to perform a domestic review of industrial innovation.[59] It was generally accepted at that time that there was an overall weakening of R&D and other signs of economic trouble.[60] Judge Newman noted:

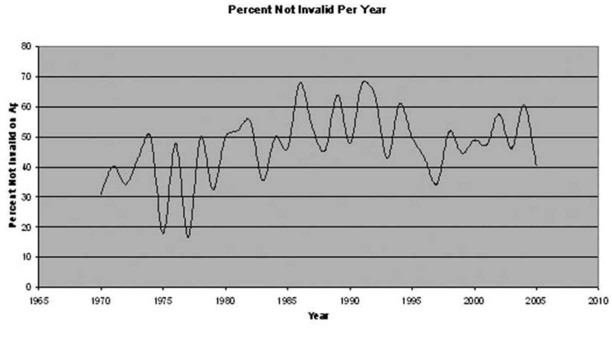
> Patents were disfavored in the 1960s and 1970s, and most agree that the courts invalidated too many patents, and that fact harmed innovation.

Judge Newman noted a low point at which they found the US economy: "Investment in basic science in applied research had disappeared . . . Our production in the United States was no longer competitive. Old technologies were stagnant. New [technologies] were dormant."[61]

The Advisory Committee report recommended the creation of the Federal Circuit to increase uniformity and reliability in patent decisions, which was believed to contribute meaningfully to decisions to file patent applications and to commercialize inventions, thereby improving industrial innovation.[62] Accordingly, the fact that the courts are finding a greater percentage of litigated patents not invalid when compared to the 1970s actually is a positive sign that innovation has increased.

All appellate patent cases from 1970-2006 (about 6,053 cases) were studied for this article, and those in which the validity of the patent was an issue on appeal were noted. Cases that were reversed and remanded for further proceedings on validity or that were vacated and remanded were not considered. Preliminary injunctions were not considered, appeals from the USPTO and interferences were not considered, and if more than one patent was at issue, each patent was counted.[63] The total number of cases reflected in Figure 10 amounted to

**Figure 10**
**Percent Not Invalidated Per Year**



about 1,500 out of the over 6,000 decisions reviewed.

The data in Figure 10 reveal that the 1980s represented an upturn in appellate rulings that patents were not invalid. This was the expected result from the Advisory Committee's recommendations, and the consequence of this was the rapid upturn in innovation and economic prosperity.[64]

Jaffe and Lerner correctly note in their book that, whenever change is implemented into any legal system, historical patterns reveal a pendulum effect. The critics stated: "[c]onsistent with the historical pattern, they [creation of the CAFC and eliminating fee diversion at the PTO] produced a dramatic swing of the patent pendulum that now cries out for adjustment in the other direction."[65] While the pendulum may have swung in the 1980s, it has swung back down in the 1990s and now is settling in at an acceptable rate (it does not cry out for adjustment in the other direction), as shown by the averages for each decade in Figure 11.[66]

**Figure 11**
**Average Not Invalid Per Decade**

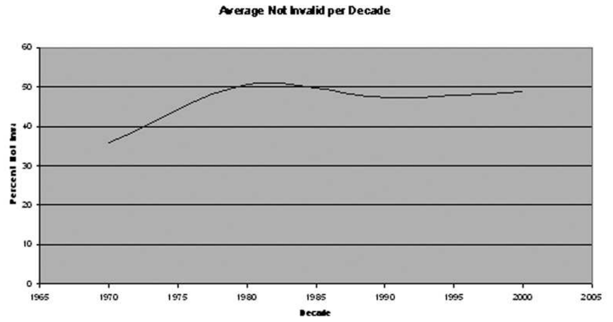


Figure 11 reveals a classic damped harmonic oscillation of a pendulum swinging in air (friction causes the pendulum to gradually stop swinging).[67] Although litigated patents are being found not invalid at a rate higher than in the 1970s, surely no one wants the United States to retreat to the economic and innovation standstill extant at that time.[68]

Some critics have alleged that there has been an explosion in patent litigation, relying primarily on the numbers of patent infringement actions filed each year.[69] There is more patent litigation because there are more patents, although the number of patent infringement suits initiated in 2005 actually decreased from the previous year.[70] Director Dudas again directly refuted the critics' allegations in this regard when he addressed the American Intellectual Property Law Association on February 3, 2006.

Another popular misperception, Dudas said, is that the rise of patent litigation has caused the quality of patents to decline. Closely related to that misperception, he noted, is the belief that there are now more court cases as a percentage of all issued patents.

The reality is otherwise, Dudas said. Statistics show that a smaller percentage of issued patents are being litigated today than in the past, an inventor is less likely to be involved in a patent lawsuit today than in the past, and the number of lawsuits filed in relation to the number of patent applications filed each year has been on a downward slope since 1990, he said.

"In 1990, we received 174,000 applications and 1,238 lawsuits were filed. In 2005, with 376,000 applications, we had a little over 3,000 lawsuits filed. That means we had a ratio of 141 in 1990 and a ratio of 122 in 2004. Again, if you look at the system as a whole, the chance of being hit with a patent suit has gone down," Dudas said.

Moreover, the number of patent lawsuits filed in relation to the number of patents granted by the USPTO is declining even more, almost 13 percent between 1988 and 2004, Dudas said. Only a small number of granted patents, perhaps 5 percent, are commercialized, and yet the perception in newspaper editorials is that patents are being routinely overturned in the courts.[71]

Patents are being found on average not invalid more frequently today than in 1970, but the data show that the Federal Circuit is not spinning out of control. Rather, the data reveal that the courts have nicely corrected themselves and placed the United States on a steady path to further prosperity and innovation. The public would be disserved by Congress, the USPTO, or the Supreme Court turning back the clocks to the anti-patent era of the 1970s.[72]

## The Critics Focus on the Wrong Question Concerning Patent Validity

The critics often lament that the USPTO is issuing invalid patents and because of that innovation is being harmed. Although the data prove otherwise (innovation is not harmed, and the USPTO is not issuing more invalid patents today on average than it did 20 years ago), focusing on the harm to innovation by issuing invalid patents is misplaced.[73] Rather, the proper question to ask is how would innovation be harmed if the USPTO and courts began to reject or invalidate valid patent claims? More importantly, what action harms innovation more, issuing an invalid claim or rejecting a valid claim?

The answer is readily apparent when one compares the patent system with the criminal justice system. Both systems were established to favor one party (the defendant in the criminal justice system and the patentee in the patent system), and consequently, both systems carry with them a presumption.[74] While some critics advocate removing the presumption of validity so that patents could be invalidated using the preponderance of evidence standard, removing the presumption of validity would have disastrous effects on innovation.[75]

Courts recognized the presumption of validity since creation of the USPTO in 1836 and *Parks v. Booth*.[76] Requiring clear and convincing evidence to overcome the presumption of validity was established by the Supreme Court in 1934 in *Radio Corp. v. Radio Engineering Lab*.[77]

> A patent regularly issued, and even more obviously a patent issued after a hearing of all the rival claimants, is presumed to be valid until the presumption has been overcome by convincing evidence of error. . . Through all the verbal variances, however, there runs this common core of thought and truth, that one otherwise an infringer who assails the validity of a patent fair upon its face bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance.

Contrary to the critics' admonitions, the Federal Circuit did not change the law, nor did it make it any harder to invalidate a patent; rather, the Federal Circuit merely consistently adopted the statutory and Supreme Court mandate that a patent is presumed valid unless proven otherwise by clear and convincing evidence of error. The Supreme Court and Congress have duly rejected overcoming the presumption of validity only by a dubious preponderance of evidence.

With the presumption of validity in hand, like the presumption of innocence, the answer to the above question can be determined by analyzing Type I and Type II statistical errors.[78] Statisticians recognize the generally accepted notion that it is better to commit a Type II error than a Type I error.[79] This is most readily understood by reference to the criminal context, where it is universally accepted in the United States that it is much better to let a guilty man go free than to convict an innocent man. The criminal justice system, therefore, has been established to minimize the error that results in convicting an innocent man.

Carrying the same principles over to the patent system, it is readily apparent that more harm to innovation results if the patent office or courts reject or invalidate an otherwise valid claim than if the patent office or courts allow or find not invalid an otherwise invalid claim. Consequently, the patent system has been established to minimize the more harmful error, minimizing the probability that an otherwise valid claim will be invalidated or rejected.

If the USPTO, Congress, or the Supreme Court were to agree with the critics and weaken the patent system by creating patent policies that reduce the likelihood that the USPTO will issue an invalid patent (*e.g.*, reduce the probability of committing a Type II error), the net effect would be to dramatically increase the probability of rejecting or invalidating an otherwise valid claim (*e.g.*, increase the probability of committing a Type I error).[80] Due to the nature of the patent system, the more appropriate question that the critics should be asking is how much harm to innovation will occur if patent policy is adjusted so that a greater percentage of valid claims are invalidated or rejected.[81]

## So Where Do We Go From Here?

The facts reveal that the patent system is not harming innovation and that the patent system is not broken, but that does not necessarily mean that the patent system would not benefit from change.[82] Many practitioners share tales of one or more outrageous actions from the USPTO, which often gives the impression that the USPTO is broken.[83] The USPTO itself gives the impression that it is broken by using extraordinary measures in high-profile reexamination proceedings.[84] The USPTO does not help its cause when it issues office actions in high-profile reexaminations on the eve (or morning) of a hearing in the underlying litigation. While making a large media splash, the attention that the USPTO receives from these actions are negative. The USPTO would do itself well to simply allow all reexaminations, whether previously litigated in high-profile cases or otherwise, to proceed through the system in due course.

Some form of change probably would be a good thing.[85] Most patent practitioners and critics would welcome a post-grant opposition procedure, and other modest change.[86] The main issues with any reform, however, concern the rationale for the reform, its implementation, resource allocation to implement the reform, and preventing system abuse and vexatious behavior, all of which require input by patent practitioners. What the patent system can ill afford is to follow the critics' advice and erode or otherwise weaken patent rights, and revert the patent system back to the innovation stalemate of the 1970s.

## Notes

1. A string cite listing all of the critics' publications would take pages, so only a handful of the more widely disseminated are provided. Two recent Supreme Court cases in which groups of university professors filed *amici* briefs are eBay, Inc. v. MercExchange, LLC, 547 U.S. (2006); and KSR Intern. Co. v. Teleflex Inc., S. Ct. No. 04-1350 (2006). Critics' writings include, Jaffe, A.B., Lerner, J., Innovation and Its Discontents, How our Broken Patent System is Endangering Innovation and Progress, and What to do About it, Princeton University Press, Princeton, New Jersey (2004) (most articles critical of the patent system published since this book represent synopses of the book in one form or another and not independent or original work); Merges, R.P., "As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform," *Berkeley Technology Law Journal*, Vol. 14, pp. 577-615 (1999); "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy," FTC Report (Oct. 2003); "A Patent System for the 21st Century," National Academy of Sciences (2004); "U.S. Patent and Trademark Office: Transforming to Meet the Challenges of the 21st Century," National Academy of Public Administration (2005). A reader need only type in "patent system is broken" in Google to return 10,700,000 hits, many of which are blogs.
2. Some commentators have referred to the critics as activists, best broadly described as "the free culture movement." Giovanetti, "Intellectual Property and its Discontents," *Washington Times*, Oct. 14, 2004. Others have referred to them as "patent anarchists" who have as an agenda the weakening of patent rights.
3. A few of the more vocal patent critics serve as board members for EFF (Electronic Frontier Foundation), serve as counsel to Silicon Valley law firms that represent the computer software, internet, and hardware industry, and consult for software companies.
4. *See* Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579 (1993). Non-patent attorneys typically would not be qualified under *Daubert* to provide an expert opinion as to the ultimate conclusion that a patent is invalid, with the exception of ex-judges who heard patent cases, but it is highly unlikely that any judge would render such an opinion in a court proceeding. Any person obviously is free to express his or her opinion regarding anything, including the validity of a patent. The author is making the point that unqualified opinions regarding the validity of a patent (a legal opinion) should be given little, if any, weight, but it appears that patent policy makers (Congress, the courts, and the USPTO) have been giving such unqualified opinions considerable weight in influencing their policy decisions. Patent attorneys find it amusing to read the critics' allegation that a certain patent is invalid (*e.g.*, the method of swinging on a swing) without interpreting the patent claims, without resort to the prosecution history, without consultation with skilled artisans to assess the claim scope and the prior art, if any, and without any citation to prior art that would invalidate the claim. A few patent attorneys discuss laughing out loud, but most discuss the lack of evidentiary proof of invalidity and the lack of understanding of a patent claim and its interpretation. "I read the book ["Innovation and Its Discontents," n.1, *supra*] and its very evident that neither author ever prosecuted a patent application. I laughed out loud at several of their misstatements." *http://www.patentlyo.com/patent/2006/07/book_review_inn.html#comments*.
5. With only one exception, the crustless peanut butter and jelly sandwich patent, these patents are not litigated. That patent, as all of the critics bemoan, was asserted by J.M. Smuckers against Albie's. The case was stayed quickly after Albie's filed a request for reexamination, and the patent claims were ultimately found to be invalid on fairly narrow grounds. No doubt some time and effort may have been needlessly spent, but Smuckers

had good reason to believe that its patent was not invalid and was being infringed. Denying a patentee a right to assert a patent it has a good faith belief is not invalid and is infringed would present a far greater harm to innovation and far greater societal waste than simply accepting that the patent system is not perfect and, consequently, must present some social cost.

6. "Perception Gap Hindering Efforts to Improve Patent System, Dudas, Says," BNA, *Patent, Trademark & Copyright J.*, Vol. 71, No. 1756 (Feb. 10, 2006): "Dudas said that those who think that the IP system is a burdensome dysfunctional system that needs to be torn down are 'wrong but sincere.' He also faulted some who want to undermine the current system for short-term professional goals. "

7. A scene from the movie "*Good Will Hunting*" is illustrative. In the scene, Sean McGuire (Robin Williams), a therapist, is sitting near a pond with Matt Damon (Will Hunting), a genius, and he is explaining to Will that one does not become an expert in anything by reading about it in a book: "So, if I asked you about art, you'd probably give me the skinny on every art book ever written. Michelangelo. You know a lot about him. Life's work, political aspirations, him and the pope, . . . the whole works, right? But I bet you can't tell me what it smells like in the Sistine Chapel. You've never actually stood there and looked up at that beautiful ceiling. Seen that . . . ." The author had a similar experience as a patent examiner and then as a patent attorney. A patent examiner begins his or her career at the USPTO by spending the first few weeks in the patent academy, learning the examination procedure by studying the Manual of Patent Examining Procedure (MPEP), along with the patent laws (35 U.S.C.) and rules (37 C.F.R.). *See* Wolinsky, S., "An Inside Look at the Patent Examination Process (Updated June 2006), *http://www.volpe-koenig.com/showarticle.asp?Show=12.* But, no matter what you learned from the books and manuals, nothing could prepare you for your first experience reading a patent claim; searching the prior art; and making that first determination of patentability. Likewise, no matter how much you learn in law school from reading patent treatises and studying case law, nothing could prepare you for the practical experience of having to draft a validity opinion or draft a motion for summary judgment of invalidity when you know that a client's livelihood depends on it. Properly assessing validity, infringement, interpreting a patent claim, etc. is something that cannot be learned from a book, but only comes through practical experience (or by at the least sitting through a trial and considering all of the proffered evidence).

   A simple example illustrates this point. Jaffe and Lerner (*see*, n.1, *supra*) reference US Patent No. 6,080,436, entitled: "Bread Refreshing Method," in making the following sweeping unsupported allegation: "the granting of patents despite clear evidence of invalidity . . . has become all too common." *Id.*, at p.34. The authors then allege that the '436 patent is invalid without any evidence of invalidity by stating: "U.S. Patent No. 6,080,436, 'Bread Refreshing Method,' which as the award states, is an 'invention concerned with the process and apparatus for refreshing bread products, particularly open face items such as sliced rolls, buns, muffins, and the like . . . via exposure to high heat'—what most people call toasting. Anyone who has recently browned a slightly stale hot dog bun over a barbeque has probably infringed this award." *Id.* at 34. The authors fail to appreciate, however, the plain language of the patent claims, especially the preamble, which recites a method of "refreshing" the bread. Toasting and browning are not "refreshing." This is hard to imagine, however, since there are only three claims and the patent is only a few pages long. The '436 patent claims require placing the bread product in an oven having a heating element, setting the heating element to a temperature between 2,500 and 4,500 °F, and ceasing exposure after 3-90 seconds. A backyard barbeque is not an "oven" and would not have a heating element at that temperature. Such simplistic, unqualified, and patently inaccurate allegations of patent validity, which support the critics's ultimate conclusions regarding patent quality, seriously undermine the critics' credibility.

8. *See* n.1, *supra*, the FTC report, the NAS report, and the NAPA report. These reports, which cite to the unqualified opinions of the critics as authority for many of their conclusions, could seriously harm competition by influencing Congress, the Supreme Court, and the USPTO to pursue irrational reform (which the USPTO already has begun to do).

9. *See* H.R. 2795, Patent Reform Act of 2005. Stephen Fox, Hewlett-Packard's deputy general counsel of IP, noted at a conference in San Francisco that members of Congress have been reading Jaffe and Lerner's book (*see,* n.1, *supra*) and even marking particular pages. "They're using it to get a perspective into the patent system," Fox said. It's given them "an aha moment—that's what it's all about." Congress soon learned, however, that much of that book was unsupported and, after soliciting testimony from only a handful of practicing patent practitioners (patent practitioners were severely underrepresented in those hearings and in some hearings since then), removed many of the controversial provisions from the Patent Act within only one month of its introduction. Interestingly, those provisions did not find their way into S. 3818, Patent Reform Act of 2006, introduced by Senator Hatch on August 3, 2006.

   Presenting factually unsupported and unqualified allegations regarding patent quality in an attempt to influence the decision makers to reform patent law has the potential to cause considerably more harm to innovation through unnecessary reform than any putatively invalid patent might cause.

10. *See* n.6, *supra*, "Dudas told the audience that he often tells his children that 'feelings are not facts,' and that the same saying applies to the IP world." Senator Hatch introduced on August 3, 2006, S. 3818, the Patent Reform Act of 2006, which again proposes some changes that would weaken the patent system (changing the definition of willful infringement, making it harder to obtain a patent, etc.), but not as severely as the Patent Reform Act of 2005.

11. *Id.* "Many people, including professors in the United States and abroad, say that the IP system in the United States is eroding innovation and destroying the world's economy. Such statements, however, are belied by a recent study showing that 45 percent of the wealth in the United States comes from intellectual property," Dudas said. "Our economy just based on intellectual property

is worth more in the United States than the entire economy of any nation throughout the rest of the world," Dudas said.

12. Tassey, G., "R&D, Innovation, and Economic Impact Indicators," report by senior economist of the National Institute of Standards and Technology (2005*), http://www.nist.gov/public_affairs/budget.htm*; "Growth through Innovation: Economic Development Indicators 2005," Joint report by the Ministry of Economic Development and the Treasure, New Zealand (2005); Zvi Griliches, "Patent Statistics as Economic Indicators: A Survey," *J. of Economic Literature*, Vol. XXVIII, pp1661-1707 (1990); Atkinson, Robert D., "The 2002 State New Economy Index—Benchmarking Economic Transformation in the States,' Progressive Policy Institute Technology and New Economy Project (June 2002).
13. *Id.* at 2J; Source: National Science Board, Science & Engineering Indicators—2006.
14. *Id.* Many critics complain that the increase in number of patent applications filed is due to the creation of the Federal Circuit (*see*, n.1, *supra*) and the elimination of fee diversion of the USPTO. They argue that the Federal Circuit and the USPTO have made it easier to obtain patent protection (these allegations belie the real data, not "factored" data, and belie the practical experience of nearly every patent practitioner, as explained in more detail in this article). The more likely reason is due to two pivotal Supreme Court cases in the early 1980s that allowed for the patenting of biological materials, Diamond v. Chakrabarty, 447 U.S. 303 (1980)), and the patenting of computer software, Diamond v. Diehr, 450 U.S. 175 (1981). These two decisions paved the way for the explosion of computer technology and biotechnology in the 1980s and 1990s, culminating in the late 1990s with a merger of the two technologies (called bioinformatics) to accomplish one of the most amazing feats of all time: sequencing the entire human genome.
15. The data are extracted from the USPTO Annual Reports and from the Dow Jones Industrial Average Rate chart, readily available at any one of a number of Web sites. The chart reveals the horns of a chicken-egg dilemma, since it is not readily apparent whether the economy drives the increase in patenting, or whether increases in patenting drive the economy. Regardless of which drives which, if at all, there is a clear correlation between the two.
16. *See* Tassey, *supra* n.12, at 6. Source for the data comes from the Bureau of Economic Analysis.
17. Source for the data comes from Tassey, *supra* n.12, at 7, and the National Science Foundation. The data were plotted and then a polynomial trend line drawn to show the increasing trend. The trend line is the thicker line.
18. One could argue that the number of articles published in peer-reviewed journals decreased in the late 1990s because of the widespread availability and use of publication on the Internet. The USPTO considers publications on the Internet "publications," which qualify as prior art.
19. Tassey, *supra* n.12, at 26. Source for the data comes from the National Science Foundation. The six Asian nations are Japan, South Korea, Taiwan, India, China, and Singapore.
20. The critics may argue that the allegedly broken patent system prevents the economic indicators from trending upward to a greater extent. But that argument again would be unsupported and factually unsupportable. In addition, it is not inconceivable that a smart economist could find an economic indicator of innovation that is not trending upward, but that factor would have to be considered in conjunction with all of the positive indicators noted here.
21. *See supra* n.1 and accompanying text.
22. *Id.* at 6. The FTC report defines a "poor quality" or "questionable" patent as "one that is likely invalid or contains claims that are likely overly broad" (*Id.* at 5). Naturally, the FTC report fails to provide any objective manner in assessing how to determine whether the patent is "likely invalid" or contains claims "that are likely overly broad" but appears to rely solely on the unqualified validity assessment of the patent critics. The FTC report notes that in some industries, "such as computer hardware and software, firms can require access to dozens, hundreds, or even thousands of patents to produce just one commercial product. One industry representative from a computer hardware firm reported that more than '90,000 patents generally related to microprocessors are held by more than 10,000 parties.'" (*Id.* at 6, quoting Peter Detkin, Intel Vice President and Assistant General Counsel).
23. The FTC report and others refer to this as follow-on innovation—the development of improvements and improvement patents. But the presence of a questionable patent or a valid patent has exactly the same effect on follow-on innovation. Diligent firms will design around or improve upon others' ideas, whether patented or not and whether covered by a questionable patent or not. Alleging that the presence of a questionable patent somehow discourages follow-on innovation therefore is specious, since the presence of a valid patent would discourage follow-on innovation even more. Moreover, discouraging research in an area already described in a publication (assume that the patent is invalid, and thus, in effect, a publication), encourages research in new, undeveloped areas, in other words, encourages innovation.
24. Shapiro, Carl, "Navigating the Patent Thicket: Cross-Licenses, Patent Pools, and Standards Setting," *Innovation, Policy, and the Economy* (2001). Intel made this argument very popular a few years ago by arguing that the number of patents in its technology area has increased so greatly that it cannot introduce a new product in the market without running afoul of thousands of patents (the so-called patent thicket). *See* FTC report, *supra* n.1, at 6.
25. Intel's annual reports do not state that it has ceased innovating but rather focus on the company's increase in innovation. The hardware industry representatives have stated to the FTC that they file more patent applications not for innovative purposes but to serve as defensive patents in the event that they were sued. But this is in and of itself innovative, and they must have invented something that is useful, novel, and non-obvious to warrant patent protection for all of the applications that they filed (unless we are to hear the computer hardware industry to say (1) that the patents they are obtaining are not worth patenting; (2) that they essentially committed inequitable conduct in pursuing patent protection for the ideas they know are not worthy of patent protection; and (3) that they conse-

quently violated antitrust laws in attempting to enforce those patents that they know are not worthy of patent protection. Surely, the computer hardware industry is not advocating that position, which means that its increased patenting is based on useful, novel, and non-obvious ideas). And other industries file defensive patent applications as well, so the computer hardware industry is no different in this regard. Filing patent applications for defensive purposes (*e.g.*, to fully cover all possible design-around options of one's competitors) is fundamentally innovative and is no way indicative of any harm to innovation. Indeed, one of the design-around options may end up being the most attractive option in the marketplace, a fact no firm would know until long after the patents have issued.

26. Intel is singled out solely because of its criticism of the patent system and the creation of the so-called patent thicket. Other computer hardware firms have bemoaned the patent thicket as well, and there is no reason to expect that the data from these companies would be any different from that of Intel's presented herein.
27. *See* n.25, *supra*.
28. McGregor, Jena, "The World's Most Innovative Companies," *Business Week Special Report*, McGraw-Hill Cos., pp.62-74 (April 24, 2006). The top 10 are Apple, Google, 3M, Toyota, Microsoft, General Electric, Procter & Gamble, Nokia, Starbucks, and IBM. More than 1,000 senior managers (1,070) responded to the survey.
29. The enemies of innovation are: (1) lengthy development times; (2) lack of coordination; (3) risk-averse culture; (4) limited customer insight; (5) poor idea selection; (6) inadequate measurement tools; (7) dearth of ideas; and (8) marketing or communication failure. The patent system simply is not considered by the top innovative companies as hindering innovation.
30. Professor Mergers alleged that the patent system was in a state of crisis in "As Many as Six Impossible Patents Before Breakfast," n.1, *supra*. These statements were repeated by Lemley in a recent article "What to do About Bad Patents," *IP Law & Business* (Jan. 2006).
31. Merges, Robert P., "Patents, Entry and Growth in the Software Industry" (August 1, 2006). "Whatever the effects of patents on the software industry, this paper concludes, they have not killed it."
32. *Id*. at 8. *See also*, nn.12-17, *supra*, and accompanying text.
33. *See* n.6, *supra*.
34. *See* nn.1 and 7, *supra*.
35. Silly patents typically are those in which most people believe have no marketability. There are Web sites devoted to silly patents, such as *patentlysilly.com*. The marketability of a particular device, method, or composition, however, has no bearing on patentability (35 U.S.C. §§ 101, 112, 102, and 103 do not concern marketability). Moreover, the author's practical experience as both a patent examiner and as a practicing patent attorney has been that the most difficult patent claims to present colorable arguments of invalidity (or unpatentability) often are those that evoke a visceral reaction that there's simply no way something that broad could be patentable. Thus, the "feeling" that some claim may be "too broad" or "invalid" has no bearing or relevance on the claim's validity.
36. Of course, what we consider silly today may not have been silly years ago. For example, in 1878, people may have considered US Patent No. 198,748, "Sled Runner Attachment for Vehicles," a silly patent, although the author can clearly discern utility, as he can with most silly patents. Some may consider the butterfly-shaped comb reflected in the 1870 design patent D4,523 a silly patent. Patent critics alive at the turn of the 20th century surely would have bemoaned the issuance on May 21, 1901, of US Patent No. 674,720, "Wheel for vehicles," alleging that someone patented the wheel, even though a thorough reading of the patent reveals that it covers a very specific wheel.
37. *See* Jaffe and Lerner, *supra* n.1, at 143. Neither the authors nor the study referred to therein define "important invention."
38. *Id*.
39. *Id*.
40. Bessen, J., Hunt, R., "The Software Patent Experiment," pp.1-23, 5 *www.researchoninnovation.org/softpat.pdf* (March 16, 2004). "[A]bout 1,000 software patents a year were granted in the early 1980s, increasing to about 5,000 a year in 1990. The rate doubled again by 1996. Nearly 25,000 software patents were granted in 2002. This was a period of very rapid growth in patenting—the number of patents of any kind granted in 2001 was 1.7 times larger than in 1981—but the growth in software patents was much larger still. As a result, the share of all patents that are counted as software patents increased from about 2% in the early 1980s to nearly 15% by 2002." *See also* Adelman, D., DeAngelis, K., "Grasping the Slim Tail of Innovative Success: Biotechnology Patenting from 1990 to 2004," pp.1-7, *justinhughes.net/ipsc2005/papers/Paper-ADELMAN.doc* (2005). "At the broadest level, we find that the number of biotechnology patents issued per year increased by more than 750 percent between 1990 and 1998. More surprisingly, despite a forty-six percent increase in biotechnology applications during the past five years, we observe a twenty-nine percent decline in the number of biotechnology patents issued over roughly the same period."
41. Asquith, J., "Software, business methods - patentable in Europe?," *http://scientific.thomson.com/free/ipmatters/sbm/8205027/*; Wagner, S., "Business Method Patents in Europe and their Strategic Use," Econpapers from EconWPA; Furutani, H., "Patentability of Business Method Inventions in Japan Compared with the US and Europe," presented at the US PTO, Nov. 3, 2003; Rausch, L, "International Patenting of Internet-Related Business Methods," *InfoBrief*, NSF 03-314 (Mar. 2003).
42. AIPLA Economic Report 2005; Gable, R. Lewis, Montague, M., "Strategies to Defer Costs of Patenting. . .," *NY L. J.*, Silicon Alley Special Insert, pp.S7, S11-S12, (Mar. 2001). *See also* the Web sites of the technology transfer office of many universities that claim that, due to the costs of foreign filing, the universities forego filing in other countries unless a licensee is paying the costs ("the biggest income producer managed by Stanford's OTL (the Cohen-Boyer DNA Cloning invention) did not have any foreign patents," *http://otl.stanford.edu/inventors/resources/patapp.html*.
43. The critics often rely on the fact that an average examiner spends on average about 18-20 hours examining each case and allege

that this is not enough time to do a good job. *See* USPTO Time & Activity Reports by examination group, 1985-1997. These statements again are likely due to the fact that the critics are not familiar with how the patent office is structured. Examiners are responsible for a very limited technology area. For the first year, it is difficult to do the job in the time allotted, and that no doubt plays a large role in the high attrition rate at the USPTO. But after examining fish hooks, or wheels, or certain aspects of computer chips for a year, a patent examiner pretty much knows all there is to know about that technology or certainly has enough knowledge to adequately examine a patent application strategically and efficiently. Problems surface, however, when new technologies arise, like polymers in the 1950s and 1960s, semiconductors in the 1970s, biotech in the late 1980s, and now business methods, software, and nanotechnology. Here, there is little prior art available since it is burgeoning technology, examiners often issue broad claims initially, but the system eventually catches up. It does every time, and it always will, regardless of the next new technology down the road.

44. *See* n.1, *supra*, at 131.
45. This information is provided by the author, who was an examiner at the USPTO from 1987-1991. Colleagues who remained at the USPTO informed the author (who often complained while working at the USPTO of the lack of computers for examiners) that all examiners were issued computers shortly after the author left the USPTO in May 1991.
46. Monthly Labor Review, "The Federal Productivity Measurement Program: final result," p.27, (May 1997).
47. US Dept. of Comm., Office of Inspector General, "USPTO Should Reassess How Examiner Goals,. . ." Final Inspection Report No. IPE-15722, p.11, (Sept. 2004).
48. *Id. See* n.43, *supra*, and accompanying text.
49. PTCJ report, n.6, *supra*. Dudas acknowledged the findings of a report issued in September 2005 by the Intellectual Property Owner's Association showing that 51.3 of the group's corporate members and patent holders regarded the quality of the patents issued by the USPTO to be "poor" or "less than satisfactory," with nearly 80 percent predicting that patent quality would stay the same or get worse in the next three years. But he stressed that the IPO report was expressly about corporate patent quality perceptions. *Id.*
50. *Id.* The author realizes that he is not heeding Director Dudas' advice in this regard by continuing the debate in the media, but to the author's knowledge, the media has yet to print the side of the debate presented here. The author certainly is willing to continue the debate in any open forum.
51. *See* Figures 10 and 11 and accompanying text, which show that patents are invalidated less frequently today than 30 years ago, when validity is an issue on appeal. This obviously is evidence that patent quality is improving and could in fact be due to the dramatic patent examination changes the USPTO made in 1976, which likely resulted in the USPTO's issuing improved quality patents and fewer invalid claims. We would expect to see improved patent quality reflected in court decisions finding patents not invalid more frequently about 6 to 8 years (and thereafter) after the USPTO implemented the examination changes in 1976. That is, we would expect to see an upturn in court decisions after about 1982-1984. *See* Allison, J.R., *et al.*, "Valuable Patents," Berkely Program in Law & Economics, Working Paper Series, paper 91 (2003), finding litigated patents spend on average about 4 years in prosecution, and most patents are litigated in their first 4 years of patent term (Fig. 1, table 4, nn.104-107 and accompanying text).
52. Many patent critics rely on the patent approval rate by "factoring" in continuation applications and arguing that continuation applications provide applicants the opportunity to obtain an allowance for nearly 100 percent of all applications filed. Quillen, Jr., C.D., Webster, O.H., "Continuing Patent Applications Performance of the U.S. Patent Office," *Federal Circuit Bar J.*, 11 (Aug. 2001), 1-21; Quillen, Jr., C.D., Webster, O.H., "Continuing Patent Applications Performance of the U.S. Patent Office—Extended," *Federal Circuit Bar J.* 12 (Aug. 2002), 33-55; Clarke, G. A., "U.S. Continuity Law and Its Impact on the Comparative Patenting Rates of the U.S., Japan, and the European Patent Office," *J. of the Patent and Trademark Office Society*, 85 (2003), 335-349.
53. "Patently Absurd," Editorial, *Wall St. J.*, Mar. 1, 2006. Numerous letters from seasoned patent attorneys have been posted as comments to this article, and as comments to an article that ran in the *Wall St. J.* shortly thereafter by Jaffe and Lerner providing a synopsis of their book (n.1, *supra*). One patent attorney noted: Jaffe and Lerner base their evidence on low patent quality on the flawed work of Quillen and Webster, and ignore the work of Lunney on court decisions. It's bad scholarship, and should be recognized as such." (*http://www.knowledgeproblem.com/archives/001555.html*).
54. This number will represent the allowance rate only until 1998, after which the allowance rate in Figure 9 will be somewhat higher than the actual rate. This is because in 1997 the USPTO revised its rules to allow applicants to file continued prosecution applications (CPA) and thereafter a request for continued examination (RCE), whereby the new application was not accorded a new filing date or application number. Thus, an original application could have been filed in 1998, and then two subsequent continuations filed in 2001 and 2003, respectively, and the patent ultimately issued in 2004. The USPTO database would show this patent as issuing from an application filed in 1998, not 2003. Thus, the data in the chart subsequent to 1997 reveals a higher allowance rate than the actual allowance rate.

    The data generated by this method includes all continuation applications, as well as originally filed applications. If the critics' allegations were true that more continuation applications were being filed and that continuation applications are allowed more frequently than originally filed applications (this statement likely is true, at least that is the author's belief from practical experience), then we would expect to see an increase in allowance rate over the years. But, despite the filing of more continuation applications each year where each continuation has a greater allowance rate, the allowance rate of all applications has steadily decreased. The data therefore reveal that the USPTO is refusing to allow originally filed applications at a greater rate than ever, making it demonstrably more difficult to obtain a patent and certainly much more difficult to obtain meaningful patent protection.

55. It was this fact that led the author to conduct the countless hours of research to prepare this article. Upon reading the critics' arguments that it was somehow easier to obtain a patent today than 10 years ago, the author knew from his personal experience and from the experience of other practicing patent attorney colleagues that it felt like it was harder today. The objective evidence is consistent with practical experience.
56. *See* n.6, *supra*. The data presented here reveals an allowance rate of about 56 percent in 1990 and about 53.3 percent in 2001. The author stopped at year 2001 since it is likely that there are applications filed in 2001 that are still pending at the patent office, which would tend to bring that number up more in line with the USPTO's own data, which likely is more reliable subsequent to 1997.
57. *Id*. *See also* n.40, *supra*, regarding biotechnology patents. The authors noted the increasing percentage of applications filed (46 percent) and the decreasing percentage of patents allowed (29 percent decline). These data present yet additional evidence that it is not easier to obtain a patent today.
58. The critics typically use improper terminology, referring to an adjudication of "validity." Courts do not find patents valid, much like criminal courts do not find defendants' "innocent" (both share a presumption). Rather, the courts either uphold the validity of the patent or find the patent "not invalid."
59. The FTC report, *supra* n.1, at 18-21. The Advisory Committee issued its report, Report of the Industrial Subcomm. for Patent and Information Policy of the Advisory Comm. on Industrial Innovation, Report on Patent Policy 155 (1979).
60. *Id*.
61. Judge Newman's testimony before the FTC, pp.36-50, 39-42 (Feb. 6, 2002).
62. *See*, Report, *supra* n.59.
63. Only appellate cases where validity was at issue were reviewed since nearly all patent infringement cases include an invalidity defense, or counterclaim, but many times the invalidity arguments are dropped before or after trial. The critics rely on data showing the percentage of cases where the courts found patents valid (not invalid) and infringed. But these data do not accurately reflect invalidity determinations, but more adequately reflect infringement findings (to find infringement, the patent must be valid since one cannot infringe an invalid patent).
64. *See* Figure 2 and accompanying text.
65. *See supra* n.1, at 80.
66. We need to bear in mind that the values reported here are for appellate decisions where validity was an issue. The data by no means suggests that nearly 50 percent of litigated patents are found invalid. Indeed, Director Dudas correctly noted: "The fact is that less than 1/20th of one percent of all patents that issue are actually overturned in court." PTCJ article, n.5.
67. Damped harmonic oscillation is a canonical system discussed in every freshman physics course. Harmonic oscillation simply oscillates back and forth, like a pendulum would do in a vacuum. Damped harmonic oscillation reduces the oscillations to zero. Damped harmonic oscillation presents the classic correction curve for process control, wherein when an automatic process controller (*e.g.*, a home's thermostat), recognizes a deviated variable, (temperature) and then corrects the process to bring the deviated variable back into acceptable limits. The control first over-corrects then under-corrects until ultimately settling on an acceptable variable limit. *See* Raven, F.H., Automatic Control Engineering (3rd Ed., McGraw-Hill Book Co., New York, NY), Chpt. 6, pp.164-195, (1978). The curve presented in Figure 11 therefore shows that the Federal Circuit actually has corrected the errors of the decades prior to its creation and now is consistently deciding cases where patent validity is at issue.
68. Given the sad state of innovation, the economy, and US competitiveness (*see*, Judge Newman's testimony at n.61, *supra*), it strikes the author as odd as to why the patent critics so eagerly compare data today with data from the 1970s to support their arguments. Do the patent critics wish the patent system to return to the standards of the 1970s or worse yet the 1940s, when the courts required the "flash of creative genius" test for a patent to be found not invalid? *See* Cuno Corp. v. Automatic Devices Corp., 314 U.S. 84 (1941). Their arguments appear to support the destruction of innovation by re-instituting this test, eviscerating the presumption of validity (*see*, Lemley, *et al.*, n.75, *infra*) and making it much, much easier to invalidate a patent based on obviousness (*see amicus* brief in KSR Intern. Co. v. Teleflex Inc., S. Ct. No. 04-1350 (2006)).
69. Jaffe and Lerner, *supra* n.1, at 14 and 15. Critics also often bemoan the increase in patent damage awards, by once again comparing damages awards today with those 30 years ago. Damages have naturally gone up, consistent with the increase in price of all goods and services, when compared to 1975.
70. Shuchman, L., "Has the Patent Litigation Boom Gone Bust?" *IP Law and Business* (July 24, 2006). "Our annual patent litigation survey shows an overall decline in the number of patent cases filed in 2005—the first drop we've seen since we began publishing this list in 2000."
71. PTCJ article, n.6, *supra*.
72. If the Supreme Court decides to follow the patent critics' logic reflected in the recently filed *amicus* brief in KSR Intern. Co. v. Teleflex Inc., S. Ct. No. 04-1350 (2006), we may find ourselves back there. The critics rely heavily on a relatively unknown Supreme Court patent case from the 1970s, Sakraida v. Ag Pro, Inc., 425 U.S. 273 (1976), which reflects the anti-patent, weak patent system mentality extant in the 1970s.
73. *See* Jaffe and Lerner, and the FTC report, *supra* n.1. The FTC report notes that "questionable" patents harm competition (not surprising since valid patents harm competition), and curb innovation.
74. Criminal law has a presumption of innocence, whereas patent law has a statutory presumption of validity, 35 U.S.C. § 282 (Patent Act of 1952). This presumption is considered the null hypothesis.
75. Lemley, M., Lichtman, D., Sampat, B, "What to do About Bad Patents," *Regulation*, Vol. 28, No. 4, pp.10-13, Winter 2005-2006. The authors' obvious ignorance of patent law

and lack of factual basis for their conclusions is best seen in the following off-the-cuff sarcasm: "Rarely a month goes by that some unknown patent holder does not surface and claim to be the true inventor of eBay or the first to come up with now-familiar concepts like hyperlinking and e-commerce."

76. Parks v. Booth, 102 U.S. 96 (1880).
77. Radio Corp. v. Radio Engineering Lab, 293 U.S. 1 (1934).
78. These errors are present whenever a decision is made, for example, the decision to allow a patent, or determining the liability of a criminal defendant, or to approve a new drug, etc. The decision maker can make (and always has the probability of making) the wrong decision in two ways, and the general rule is that we should adopt policies (laws, rules, regulations, case law, etc.) to try to minimize the more harmful errors. The decisional error in patent examination is made by either allowing an invalid claim or not allowing a valid claim. The patent system therefore is set up to minimize the more harmful error.
Recall that the statutory presumption was the null hypothesis. A Type I error (often labeled alpha) is made by rejecting the null hypothesis when the null hypothesis were true (finding a patent claim invalid when in fact it was valid or patentable). A Type II error (often labeled beta) is made by accepting the null hypothesis when the null hypothesis is false (finding a patent claim valid when in fact it was invalid).
79. *See*, *e.g.*, *http://www.intuitor.com/statistics/T1T2Errors.html.* In the criminal justice system, the patent system, and in statistics, there is no possibility of absolute proof, and so a standard has to be set for rejecting the null hypothesis. In the patent system, the standard is clear and convincing evidence, which is similar to the reasonable doubt standard in the criminal context. The null hypothesis has to be rejected with clear and convincing evidence. In statistics, the standard is the maximum acceptable probability that the effect is due to random variability in the data rather than the cause being investigated.
80. Decreasing the probability of making one type of error by, say one percent, has the effect of increasing the probability of making the other type of error by more than one percent, because their relationship is non-linear.
81. Eviscerating the presumption of validity and removing the suggestion/motivation requirement to combine prior art in an obviousness challenge would have the effect of greatly increasing the probability that the USPTO and the courts will reject or invalidate a valid claim. We already know the incredible harm this would have on innovation because we lived through it from 1930-1970.
82. Patent practitioners have been critical of the quality of the examination process in the US and in Europe for years, but most agree that the quality has stayed about the same. "IPO Survey Shows Corporate Dissatisfaction With Quality of Patents Issued by PTO," 70 *PTCJ* 526 (Sept. 16, 2005); Burke, Paul F. and Reitzig, Markus G., "Measuring Patent Assessment Quality—Analyzing the Degree and Kind of (In)Consistency in Patent Offices' Decision Making" (May 2006). The critics always have complained about quality, and they always will. Imagine the difficulty in maintaining consistency with more than 3,000 examiners all making judgments based on incomplete information (information will always be incomplete, but improving the type and quality of information examiners review certainly would be a welcome change). Consistency is impossible in this context.
83. The author recently received an Invitation to Pay Additional Fees in a PCT application, which presented a lack of unity objection and alleged the application contained 4,617,329 separate and distinct inventions; this, despite the fact that the parent application, which contained even broader claims, received no lack of unity of objection. Because of the nature of the PCT examination process, if applicants wished to protest, they had to pay $1,000 for each invention, or more than $4.6 billion (that's more than 4 times the annual operating budget of the USPTO) and request a refund if the USPTO agreed that the lack of unity objection was without merit.
84. In both the NTP and MercExchange reexaminations, the USPTO has inappropriately set timelines and issued office actions just prior to critical court hearings, instead of adhering to the Federal Circuit's mandate in Ethicon v. Quigg, 849 F.2d 1422 (Fed. Cir. 1988), which requires reexamination proceedings to be neutral and to proceed with special dispatch.
85. Jaffe and Lerner suggest in their book that Congress and other patent policy makers should not heed the advice of patent practitioners because the patent practitioners are motivated by greed, ("at bottom their interest is in their own profits and livelihoods"), they are making a lot of money off of the system the way it is, and consequently would not want to see it changed. *See* n.1, *supra*, at 23 and 24—"Patent Policy is Too Important to Leave to the Patent Lawyers." Once again, the authors miss the mark. Patent practitioners make more and more money every time the rules and laws change, so patent practitioners welcome change, especially irrational change. This is why most practitioners do not get involved in policy making decisions and because most are too busy practicing law to write articles or testify before Congress (an informal survey of practicing patent attorney colleagues proved this to be the case). It is incredibly hypocritical for the professors to make this allegation, especially when their livelihood and salary depends in part on the number of times they are published (*see* Director Dudas' comment that faulted some critics who want to undermine the current system for short-term professional goals, n.5, *supra*) and especially when the position that they are advocating is not for the overall good of the patent system, but rather to push their own anti-patent, free-culture agenda while advocating for a particular industry sector.
86. Senator Hatch introduced to the Senate on Aug. 3, 2006, S. 3818, (the Patent Reform Act of 2006), again proposing a post grant opposition procedure. Other proposals in the bill like first-to-file, re-defining willful infringement in a manner that will essentially make it impossible to ever find willfulness, and granting the USPTO greater rule-making authority, likely will be met with opposition from the patent bar for good reason. It continues to amaze the author the infatuation scholars in our country have with other less innovative countries' patent systems and the desire to reform our patent system, which fuels the most innovative country in the world, to be more like theirs (*see* n.28, *supra*, where eight out of the top 10 innovative companies were US-based, and the other two were Japanese).